FIG. 1

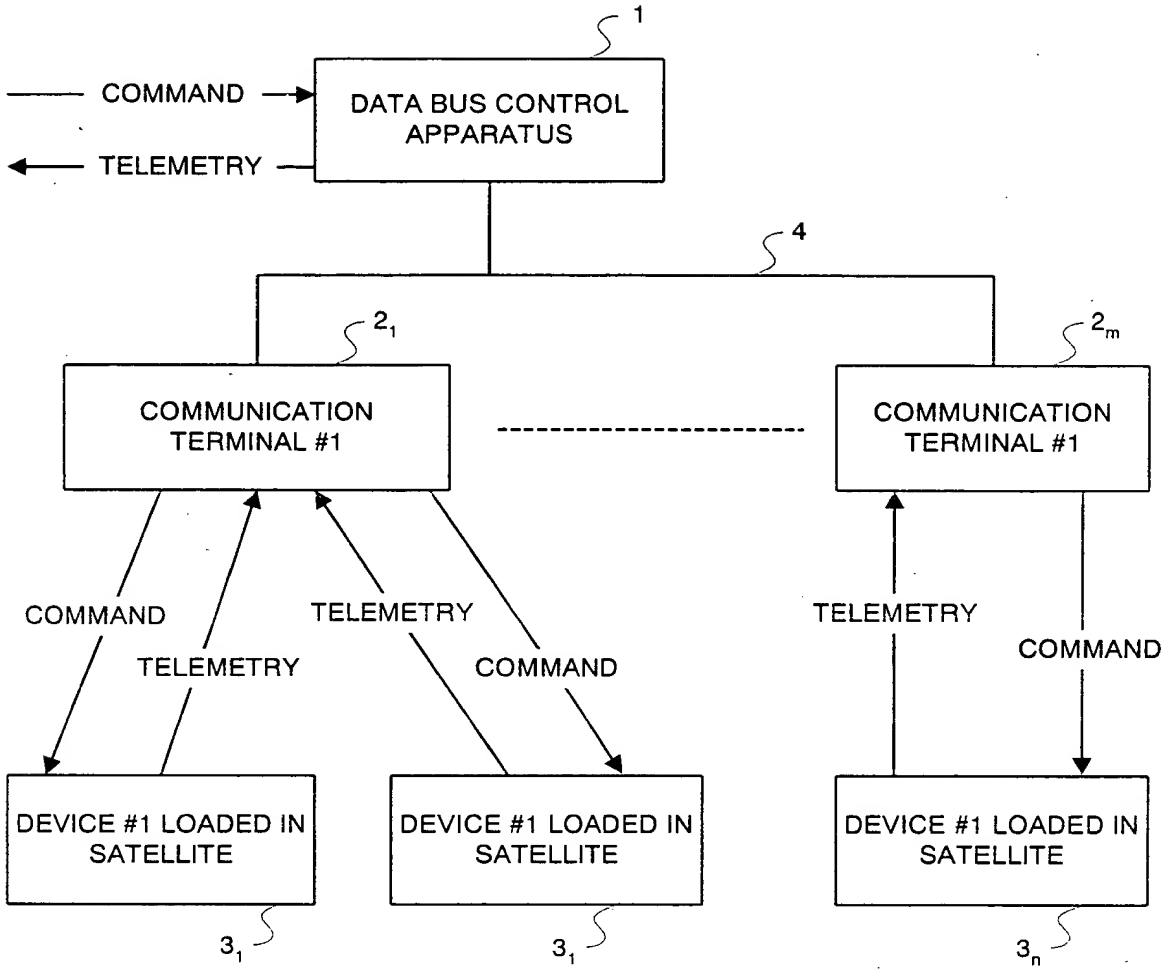

1
COMMAND
TELEMETRY
DATA BUS CONTROL APPARATUS
4
2₁
2m
COMMUNICATION TERMINAL #1
COMMUNICATION TERMINAL #1
COMMAND
TELEMETRY
TELEMETRY
COMMAND
TELEMETRY
COMMAND
DEVICE #1 LOADED IN SATELLITE
DEVICE #1 LOADED IN SATELLITE
DEVICE #1 LOADED IN SATELLITE
3₁
3₁
3n

FIG. 2

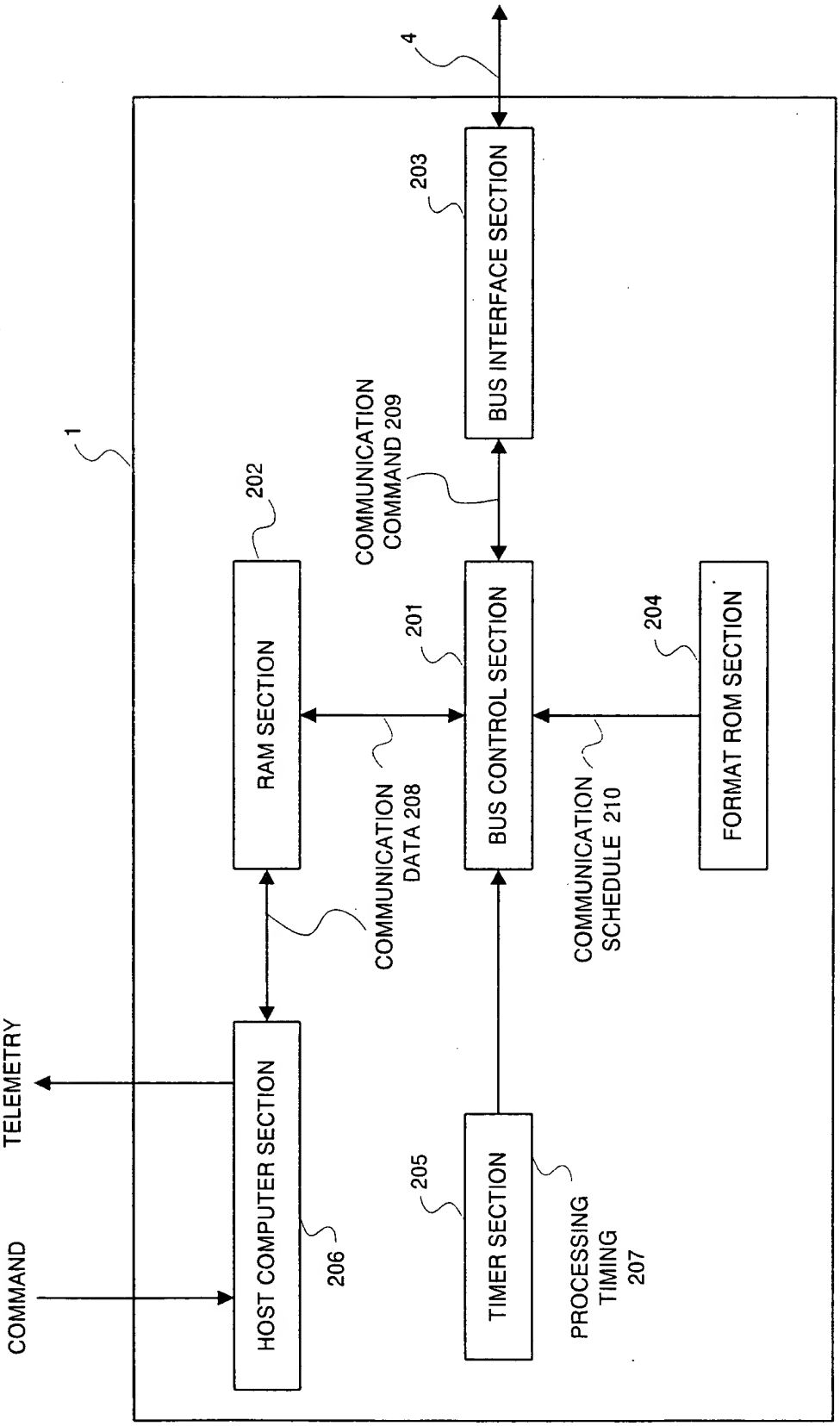

1
4
BUS INTERFACE SECTION
203
COMMUNICATION COMMAND 209
202
RAM SECTION
201
BUS CONTROL SECTION
204
FORMAT ROM SECTION
COMMUNICATION DATA 208
COMMUNICATION SCHEDULE 210
TELEMETRY
COMMAND
HOST COMPUTER SECTION
206
205
TIMER SECTION
PROCESSING TIMING 207

FIG. 3

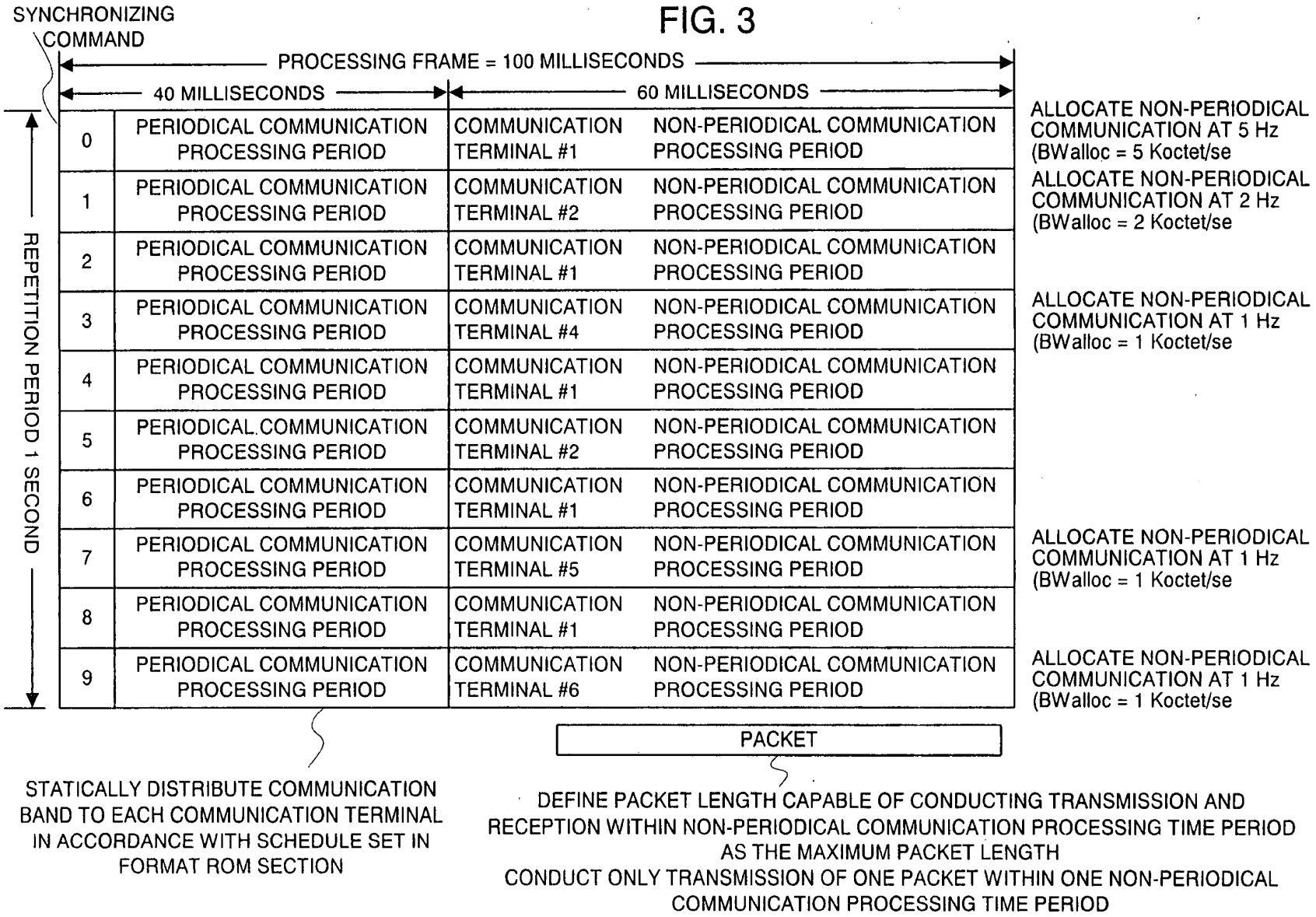

SYNCHRONIZING COMMAND
PROCESSING FRAME = 100 MILLISECONDS
40 MILLISECONDS
60 MILLISECONDS
REPETITION PERIOD 1 SECOND
0 PERIODICAL COMMUNICATION PROCESSING PERIOD
COMMUNICATION TERMINAL #1
NON-PERIODICAL COMMUNICATION PROCESSING PERIOD
ALLOCATE NON-PERIODICAL COMMUNICATION AT 5 Hz (BWalloc = 5 Koctet/se
1 PERIODICAL COMMUNICATION PROCESSING PERIOD
COMMUNICATION TERMINAL #2
NON-PERIODICAL COMMUNICATION PROCESSING PERIOD
ALLOCATE NON-PERIODICAL COMMUNICATION AT 2 Hz (BWalloc = 2 Koctet/se
2 PERIODICAL COMMUNICATION PROCESSING PERIOD
COMMUNICATION TERMINAL #1
NON-PERIODICAL COMMUNICATION PROCESSING PERIOD
3 PERIODICAL COMMUNICATION PROCESSING PERIOD
COMMUNICATION TERMINAL #4
NON-PERIODICAL COMMUNICATION PROCESSING PERIOD
ALLOCATE NON-PERIODICAL COMMUNICATION AT 1 Hz (BWalloc = 1 Koctet/se
4 PERIODICAL COMMUNICATION PROCESSING PERIOD
COMMUNICATION TERMINAL #1
NON-PERIODICAL COMMUNICATION PROCESSING PERIOD
5 PERIODICAL COMMUNICATION PROCESSING PERIOD
COMMUNICATION TERMINAL #2
NON-PERIODICAL COMMUNICATION PROCESSING PERIOD
6 PERIODICAL COMMUNICATION PROCESSING PERIOD
COMMUNICATION TERMINAL #1
NON-PERIODICAL COMMUNICATION PROCESSING PERIOD
7 PERIODICAL COMMUNICATION PROCESSING PERIOD
COMMUNICATION TERMINAL #5
NON-PERIODICAL COMMUNICATION PROCESSING PERIOD
ALLOCATE NON-PERIODICAL COMMUNICATION AT 1 Hz (BWalloc = 1 Koctet/se
8 PERIODICAL COMMUNICATION PROCESSING PERIOD
COMMUNICATION TERMINAL #1
NON-PERIODICAL COMMUNICATION PROCESSING PERIOD
9 PERIODICAL COMMUNICATION PROCESSING PERIOD
COMMUNICATION TERMINAL #6
NON-PERIODICAL COMMUNICATION PROCESSING PERIOD
ALLOCATE NON-PERIODICAL COMMUNICATION AT 1 Hz (BWalloc = 1 Koctet/se
PACKET
STATICALLY DISTRIBUTE COMMUNICATION BAND TO EACH COMMUNICATION TERMINAL IN ACCORDANCE WITH SCHEDULE SET IN FORMAT ROM SECTION
DEFINE PACKET LENGTH CAPABLE OF CONDUCTING TRANSMISSION AND RECEPTION WITHIN NON-PERIODICAL COMMUNICATION PROCESSING TIME PERIOD AS THE MAXIMUM PACKET LENGTH
CONDUCT ONLY TRANSMISSION OF ONE PACKET WITHIN ONE NON-PERIODICAL COMMUNICATION PROCESSING TIME PERIOD

FIG. 4

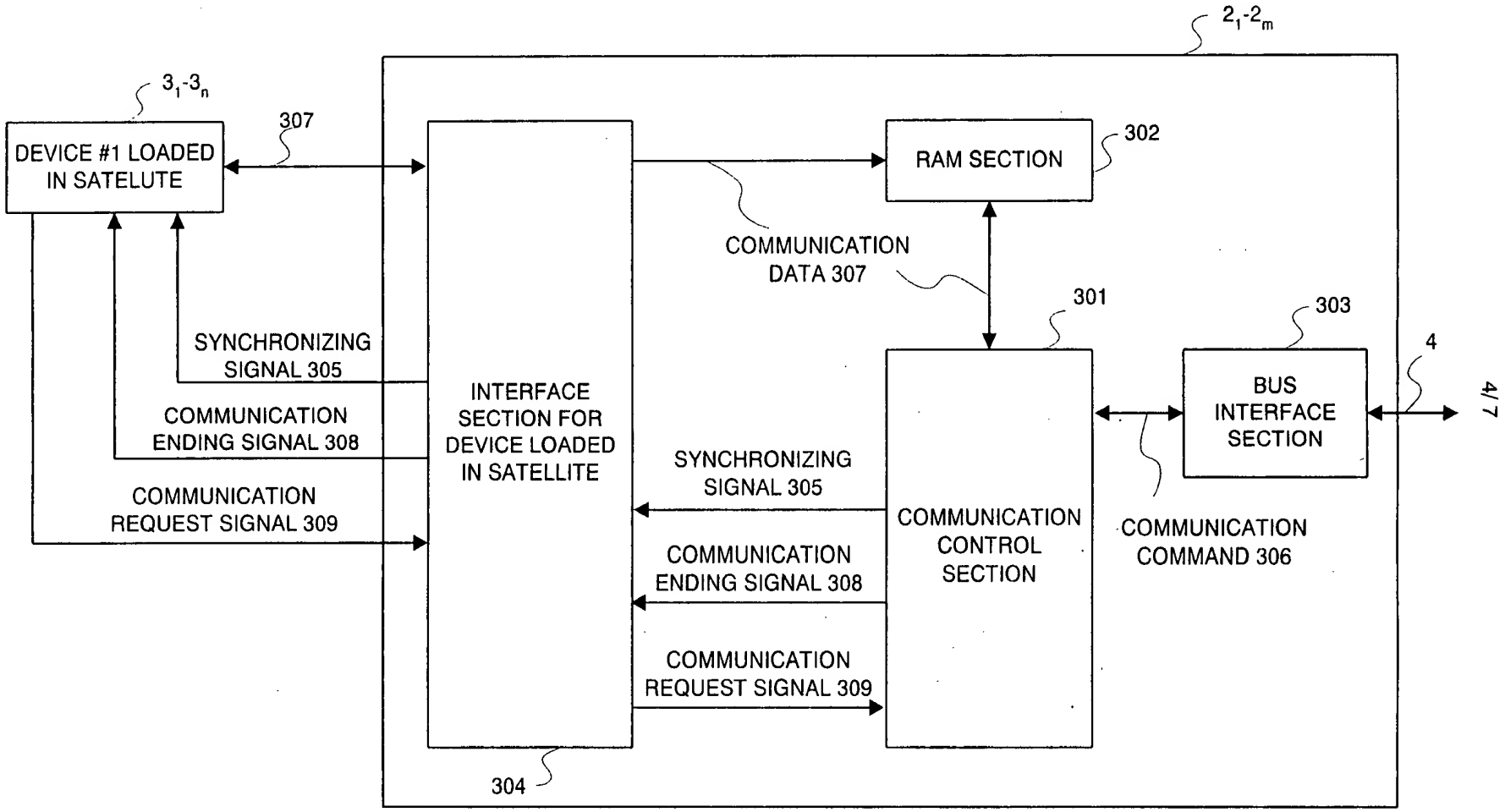

$2_1$-$2_m$
$3_1$-$3_n$
DEVICE #1 LOADED IN SATELUTE
307
INTERFACE SECTION FOR DEVICE LOADED IN SATELLITE
RAM SECTION
302
COMMUNICATION DATA 307
301
303
4
BUS INTERFACE SECTION
4/7
SYNCHRONIZING SIGNAL 305
COMMUNICATION ENDING SIGNAL 308
COMMUNICATION REQUEST SIGNAL 309
SYNCHRONIZING SIGNAL 305
COMMUNICATION ENDING SIGNAL 308
COMMUNICATION REQUEST SIGNAL 309
COMMUNICATION CONTROL SECTION
COMMUNICATION COMMAND 306
304

FIG. 5

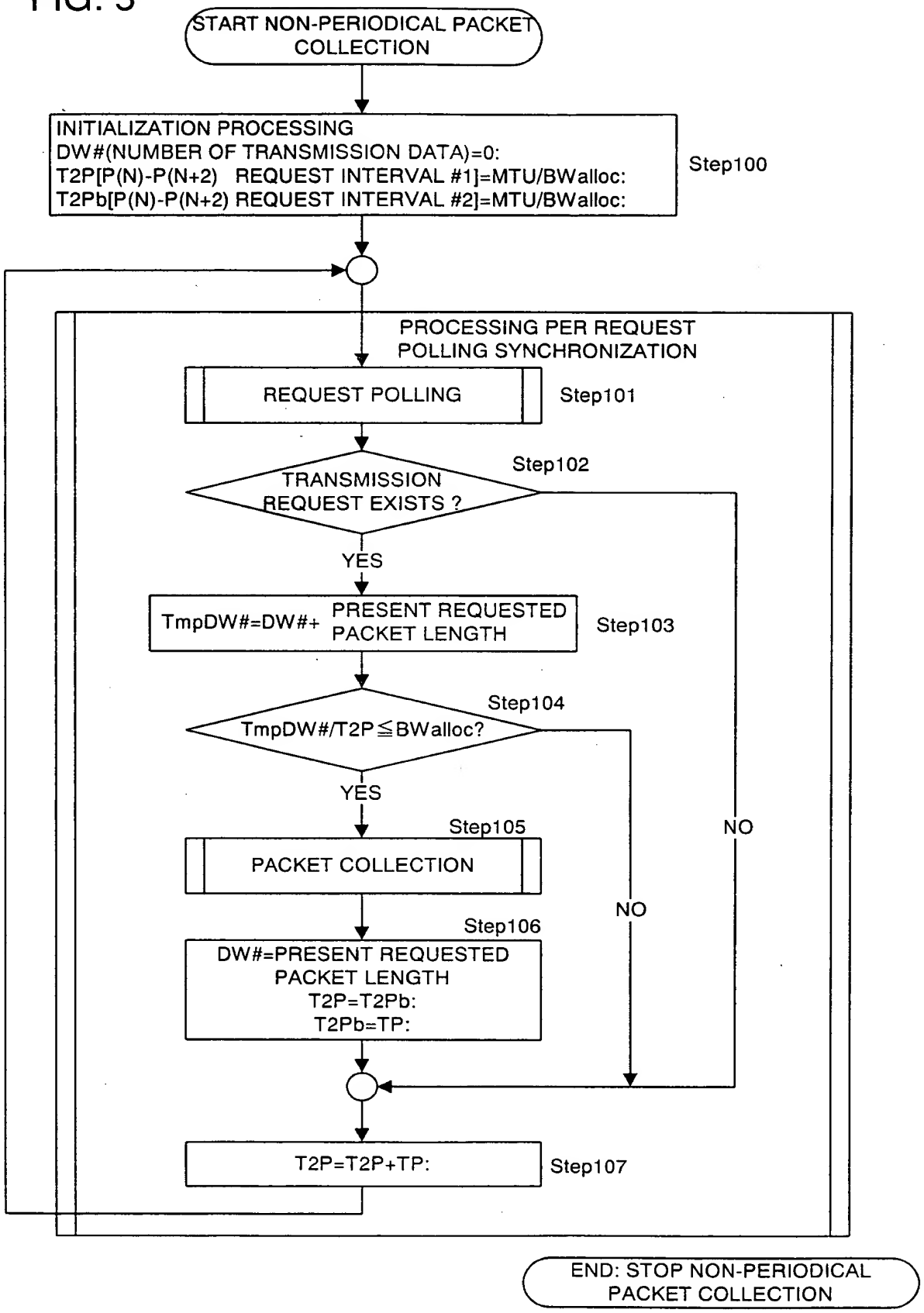

START NON-PERIODICAL PACKET COLLECTION
INITIALIZATION PROCESSING
DW#(NUMBER OF TRANSMISSION DATA)=0:
T2P[P(N)-P(N+2) REQUEST INTERVAL #1]=MTU/BWalloc:
T2Pb[P(N)-P(N+2) REQUEST INTERVAL #2]=MTU/BWalloc:
Step100
PROCESSING PER REQUEST POLLING SYNCHRONIZATION
REQUEST POLLING
Step101
TRANSMISSION REQUEST EXISTS ?
Step102
YES
NO
TmpDW#=DW#+ PRESENT REQUESTED PACKET LENGTH
Step103
TmpDW#/T2P≦BWalloc?
Step104
YES
NO
PACKET COLLECTION
Step105
DW#=PRESENT REQUESTED PACKET LENGTH
T2P=T2Pb:
T2Pb=TP:
Step106
T2P=T2P+TP:
Step107
END: STOP NON-PERIODICAL PACKET COLLECTION

FIG. 7

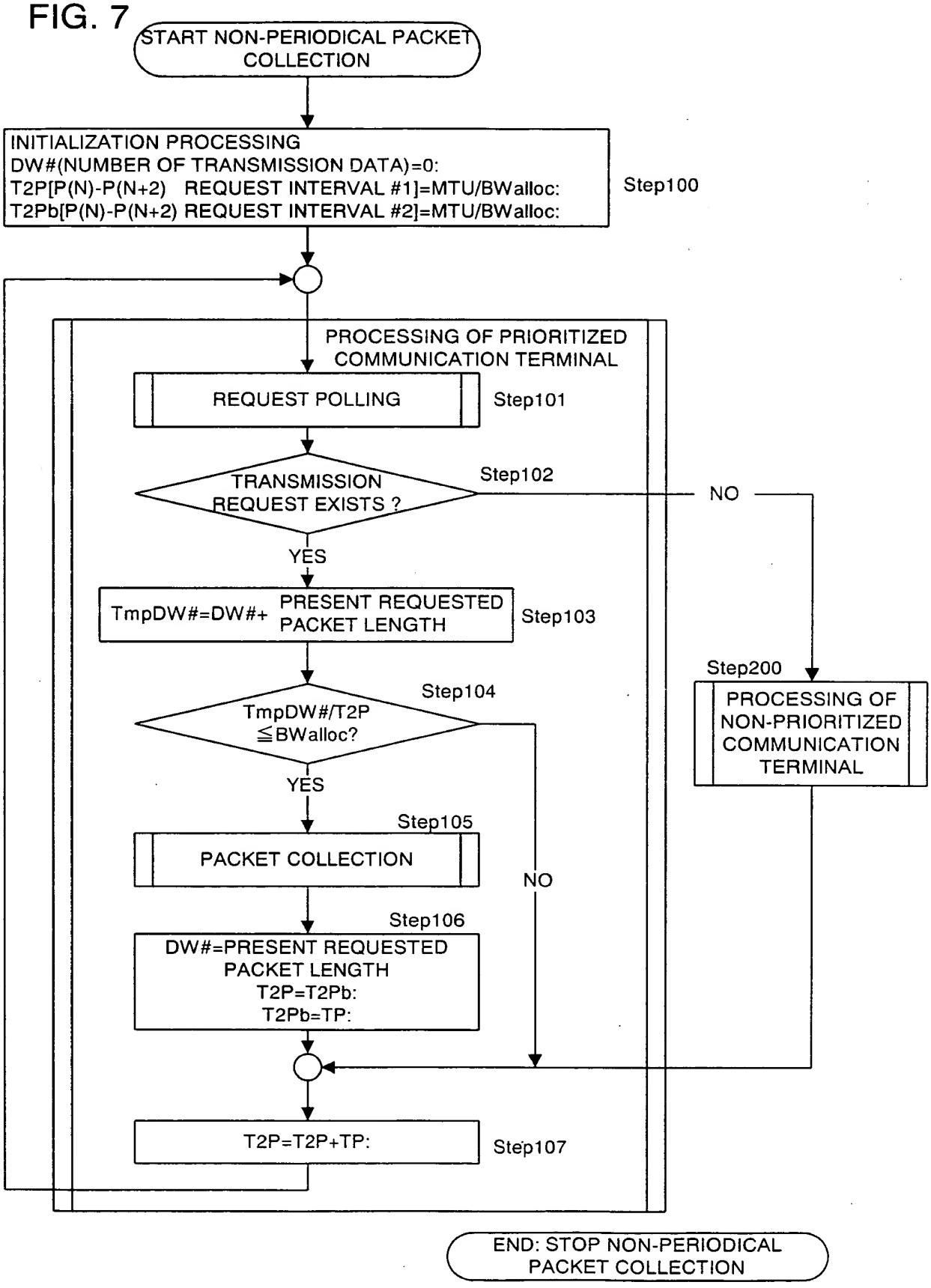
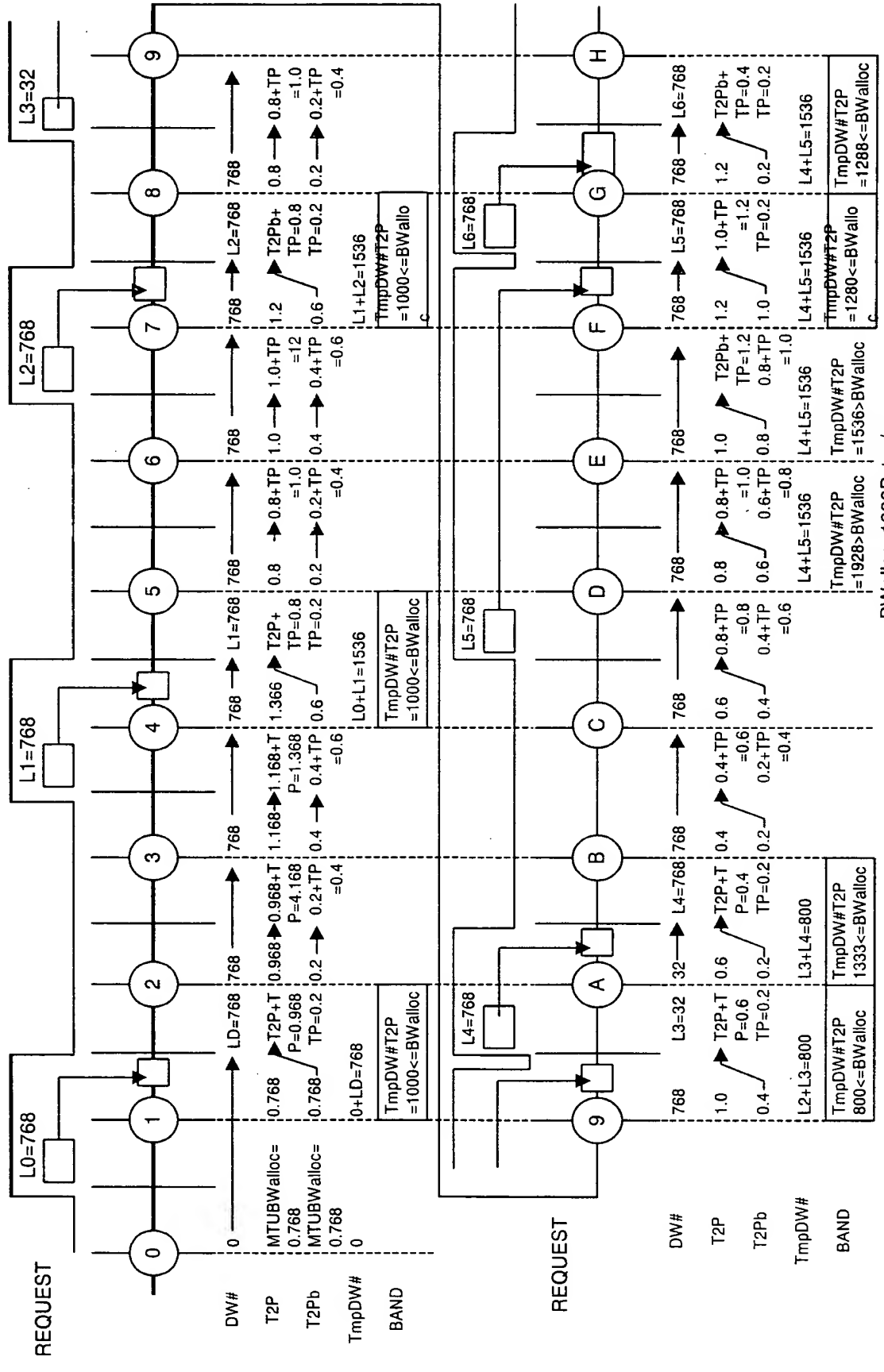

START NON-PERIODICAL PACKET COLLECTION
INITIALIZATION PROCESSING
DW#(NUMBER OF TRANSMISSION DATA)=0:
T2P[P(N)-P(N+2) REQUEST INTERVAL #1]=MTU/BWalloc:
T2Pb[P(N)-P(N+2) REQUEST INTERVAL #2]=MTU/BWalloc:
Step100
PROCESSING OF PRIORITIZED COMMUNICATION TERMINAL
REQUEST POLLING
Step101
TRANSMISSION REQUEST EXISTS ?
Step102
NO
YES
TmpDW#=DW#+ PRESENT REQUESTED PACKET LENGTH
Step103
Step200
PROCESSING OF NON-PRIORITIZED COMMUNICATION TERMINAL
Step104
TmpDW#/T2P ≦BWalloc?
YES
Step105
PACKET COLLECTION
NO
Step106
DW#=PRESENT REQUESTED PACKET LENGTH
T2P=T2Pb:
T2Pb=TP:
T2P=T2P+TP:
Step107
END: STOP NON-PERIODICAL PACKET COLLECTION

FIG. 6


REQUEST
L0=768
L1=768
L2=768
L3=32
L4=768
L5=768
L6=768
DW#
T2P
T2Pb
TmpDW#
BAND
MTUBWalloc=
0.768
LD=768
T2P+T
P=0.968
TP=0.2
0.968+T
P=4.168
0.2+TP
=0.4
1.168+T
P=1.368
0.4+TP
=0.6
1.366
T2P+
TP=0.8
TP=0.2
0.8+TP
=1.0
0.2+TP
=0.4
1.0+TP
=12
0.4+TP
=0.6
T2Pb+
TP=0.8
TP=0.2
0.8+TP
=1.0
0.2+TP
=0.4
L0+LD=768
L0+L1=1536
L1+L2=1536
TmpDW#T2P
=1000<=BWalloc
L2+L3=800
L3+L4=800
L4+L5=1536
L4+L5=1536
TmpDW#T2P
800<=BWalloc
TmpDW#T2P
1333<=BWalloc
TmpDW#T2P
=1928>BWalloc
TmpDW#T2P
=1536>BWalloc
TmpDW#T2P
=1280<=BWalloc
TmpDW#T2P
=1288<=BWalloc
T2P+T
P=0.6
TP=0.2
T2P+T
P=0.4
TP=0.2
0.4+TP
=0.6
0.2+TP
=0.4
0.8+TP
=1.0
0.6+TP
=0.8
0.8+TP
=1.2
0.8+TP
=1.0
1.0+TP
=1.2
T2Pb+
TP=0.4
TP=0.2
BWalloc=1333Bytes/sec